

Abstract Submitted  
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**Theory of terahertz absorption spectra due to two-magnon processes in cycloidal spin magnets** SHIN MIYAHARA, Multiferroics Project (MF), ERATO, Japan Science and Technology Agency (JST), NOBUO FURUKAWA, Aoyama Gakuin University — Ferroelectric perovskite magnets  $RMnO_3$  have an attraction both experimentally and theoretically after the discovery of the ferroelectric polarization and its flop by external magnetic field. Recently the measurements by the terahertz time-dominant spectroscopy have been investigated with the several sets of light polarization, and novel magnon states induced by the electric field are observed. Such a spin excitation is called an electromagnon. However, the origin of the electric-dipole active absorption is not clarified yet. We calculated the absorption of light due to the electric dipole transitions associated with two magnon excitations in cycloidal spin magnets. The theory is applied to the ferroelectric magnets  $RMnO_3$ , and absorption peaks in terahertz time domain spectroscopy, which correspond to electromagnons, are interpreted with reasonable parameter sets.

Shin Miyahara  
Multiferroics Project (MF), ERATO,  
Japan Science and Technology Agency (JST)

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